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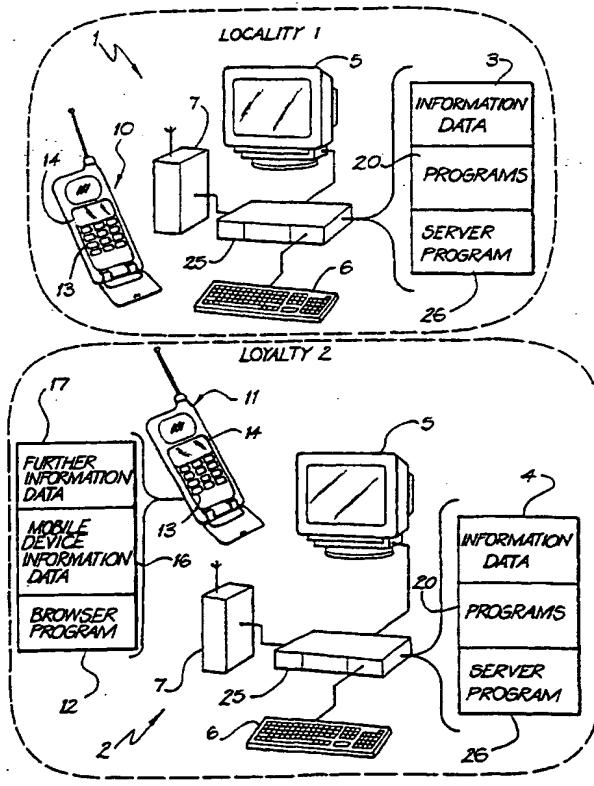
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[Continued on next page]

(54) Title: A SYSTEM AND METHOD FOR THE PROVISION OF INFORMATION WITHIN A PREDETERMINED LOCALITY



(57) Abstract: The present invention relates to a system and method for the provision of information to a small computing device, such as a palm top computer or a mobile phone, within a predetermined locality. The predetermined locality is served by a server, and the small computing device is provided with a browser. The server provides information relating to a product and/or a service available at the locality for display on the display of the small computer.

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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

A SYSTEM AND METHOD FOR THE PROVISION OF INFORMATION WITHIN
A PREDETERMINED LOCALITY

The present invention relates to a system and method for provision of information within a predetermined locality and, particularly, but not exclusively, to a system and method for providing information to a small computing device within a predetermined locality.

Systems are known for providing information which is specifically associated with a predetermined locality. For example, there have been instances of restaurants providing networks including a console provided on dining tables networked to a central computer. Menu information is provided by the console to diners and diners may select menu items. Menu item data is transmitted to the central computer so that a menu order can be logged and actioned. Such systems are dedicated, hard wired systems. It is necessary for the restaurant to provide the full system infrastructure i.e., the consoles, the central computer and the hard-wiring. This is expensive and lacks versatility.

Wide area networks (WANs), such as the Internet, are also well known. Such networks enable information to be provided for access by users worldwide. The information is not locale specific. It can be any information relating to any subject.

"Small computing devices" are nowadays widely available. By the term "small computing device" we mean laptop computers or smaller, such as palmtop type computers, personal organisers and mobile telephones, for example. These devices usually have fairly specific purposes, particularly the smaller devices. A palmtop-type computer may be used for a diary function, keeping memos, "to do" lists, even word processing. The functions are usually dedicated to the user of the computer, however. Similarly with mobile telephones, their function is one of communication between users. They may also store telephone

numbers and keep some other records.

Such devices are arranged to be portable and are nowadays, in many countries, ubiquitous.

International Patent Application publication 5 WO9944/07125 discloses a system where local agents broadcast URL's to mobile information terminals which may be mounted in motor vehicles. The mobile information terminal can then access the Internet and download the page designated by the URL. A problem with this system is that 10 it must communicate with the Internet to obtain the information designated by the URL. The information is not obtained from a local agent. Communications to the Internet may be unreliable. Further, they may also be slow.

15 The present invention provides a mobile computing device for receiving information data provided by server computing devices each of which may be arranged to provide different information data, the mobile computing device comprising browser means arranged, when the mobile computing device is within a predetermined area where information data from a server computing device can be received, to receive information data from the server computer, and further comprising presentation means for presenting information produced from the information data.

25 The information is preferably produced directly from the information data provided to the browser means of the mobile computing device. It is not necessary for the mobile computing device to access a further system, such as the Internet, to obtain the information.

30 Preferably, the browser means is arranged to detect when the mobile computing device has entered the predetermined area and is then enabled to receive any information which is being broadcast by the server computer device.

35 The mobile computing device is preferably a small

-3-

computing device, such as a mobile telephone or palmtop computer. The browser means preferably includes operating system software which is loaded onto the small computing device. When a person carrying a small computing device 5 enters the predetermined locality, the mobile computing device may therefore receive any information which an owner of the server computer may wish to broadcast within that predetermined locality. Preferably, the broadcast is by wireless signal. For example, it may be radio, or infra-red, or any other wireless means.

10 The browser means may include any software which can download information data from the server computing device and present the information on a presentation means (e.g. display or audio outlook) of the mobile computing device.

15 In one embodiment, the browser means may utilise the virtual machine means which is disclosed in Australian Patent Application number 660334/98 (the disclosure of which is incorporated herein by reference), in order to process information data to be received by the mobile 20 computing device and sent from the mobile computing device, as at least part of the browser means. Any suitable software could be used for the browser means, however.

25 The information is preferably information associated with the predetermined locality, in the sense that it is information that a person specifically wishes to transmit to that specific locality. It would not be communication information such as voice data which is communicated between two phones in two different areas.

30 The information content is preferably for facilitating a service or product (or both) provided at a locality or associated with the locality. That is, the information content would have some association with the service or product in the sense that it could be, for example, a description of the service or product, could be an 35 advertisement, could be information which the owner of the

computing device requires to interact with the service or product (e.g., the information could be a menu in a restaurant), the information could facilitate playing a game (where the game is the service or product, e.g., in golf the information could be geographical information or map information displaying the golf course).

All owners of small computing devices having the browser software loaded on to them would therefore be able to receive the predetermined locality information when they 10 entered the predetermined locality, on their ubiquitous small computing device which they generally also use for other applications.

The browser software is generic in the sense that any 15 information data which is compatible with the browser software may be transmitted, transmitting any type of information that is desired to the predetermined locality.

Preferably, the mobile computing device may also provide mobile device information data to the server computing device, such as data identifying the mobile 20 device and the owner, for example. In addition, further information data may be transmitted by the mobile computing device to the server computing device. The further information data may relate to information to be used by the server computing device to facilitate an operation 25 associated with the predetermined locality, for example.

Preferably, a network is formed between the mobile computing device and the server computing device which allows for the interactive exchange of data (the mobile computing device and server computing device essentially 30 establish a locality based "session" in which information can be exchanged between them).

Preferably, communications between the server computing device and the mobile computing device is direct and there is preferably no intervening network, for 35 example. As discussed above current communications may be

by way of radio, infra-red, or any other wireless communications. Infra-red may be preferred for reliability.

5 The present invention further provides a server computing device which is arranged to provide information to a mobile computing device such as discussed above when the mobile computing device is present in the predetermined locality.

10 The information may be provided in response to the computing device entering the predetermined locality, or broadcast continuously or at predetermined times for any mobile computing device that may be in the predetermined area.

15 The invention also provides a system which includes a plurality of the server devices and mobile computing devices as discussed above, each of the plurality of server computing devices being arranged to provide information specific to a predetermined locality, so that there are a plurality of predetermined localities where information may 20 be received by a mobile computing device.

25 The present invention further provides a method of providing information to a mobile computing device comprising the steps of detecting when the mobile computing device enters a predetermined locality and providing information to the mobile computing device when entry to the predetermined locality has been detected.

30 In this aspect of the invention, the mobile computing device may itself detect when it enters an area where a signal is being broadcast by a server computing device, and then receive a signal to display the information.

Alternatively, the server computing device may detect a (switched-on) mobile computing device entering the area and provide information.

35 Please note that "detecting" should be read to cover the case where the mobile computing device may already be

-6-

in the area and is switched on so that only then it is detected that the mobile computing device is within the predetermined locality. Further, means may be required to be actuated to enable reception of the information (e.g. 5 pressing a button to enable a "reception" function).

Features and advantages of the present invention become apparent from the following description of embodiments thereof, by way of example, with reference to the accompanying drawings, in which:

10 Figure 1 is a schematic diagram of a system in accordance with an embodiment of the present invention;

15 Figure 2 is a schematic diagram of a further embodiment of a system in accordance with the present invention, and

20 Figure 3 is a schematic diagram of a further embodiment of a system in accordance with the present invention. Referring to figure 1, a system in accordance with an embodiment of the present invention is shown and includes server computer devices 1 and 2 which are arranged so as to be able to transmit information data 3, 4 within respective localities, locality 1 and locality 2. Note that although the localities are shown proximate to each other in the drawing, they may be widely dispersed. Further, there may 25 be any number of server computers serving any number of localities.

30 The same reference numerals will now be used to identify similar components of each of the server computing devices 1 and 2. Each server computing device 1, 2, comprises a computer module 25, which may, for example, be a PC, a display 5, a keyboard 6 and a radio transmitter 7.

35 The keyboard 6 may be used to enter or update information data 3, 4. A server program 26 is loaded onto the computer 4, the server program being arranged to interface with mobile computing devices 10, 11 when the

mobile computing devices 1, 2 are in the localities 1 or 2.

Each mobile computing device 10, 11, includes a browser program 12. In the illustrated embodiment the mobile computing devices 10, 11 are mobile telephones, but they may be other small computing devices, such as palmtop computers, for example. Each mobile computing device 10, 11 is also loaded with mobile device information data 16, which may identify the mobile computing device 10, 11.

Each mobile computing device 10, 11 also includes an input means 13, in the form of a keypad, and a presentation means 14 in the form of a LCD display. The user of the mobile computing device 10, 11 may enter further information 17 via the keypad 13.

When the mobile computing device 10, 11 enters the locality 1 the browser program 12 can detect signals transmitted from transmitter 7 by the server computing device 1. Note that the computing device 10, 11 may need to be switched on to do this. A further keypad operation 13 may be necessary to activate the browser program 12 to detect signals from the transmitter 7. An alternative is that the computing device 10, 11 is transmitting a signal and when it enters the locality 1 this is detected by the server computing device 1 before any signal is transmitted from the server computing device 1 for detection by the mobile computing device 10, 11. A hand shaking routine may also be involved.

Once any hand shaking routine has been completed, the browser program 12 may receive information data from the server computer, and this information is presented on the display 14. The mobile device 10, 11 and computer 1 form a network allowing for the exchange of data between the devices. The system is arranged such that the display of the small computing devices (which are usually much smaller than those of a P.C.) are able to display the information transmitted by the server computer. The server computer

may transmit the information in a form which is easily processable and presentable by the browser on the small computing device. A system such as WAP (Wireless Application Protocol) may be utilised. You will appreciate that any method of communication may be utilised which enables information to be received and displayed by the small computing device and received from the small computing device by the server computing device.

For example, locality 1 may be a restaurant or dining area. The restaurateur may wish to transmit information relating to the restaurant to mobile computing devices 10, 11 owned by potential diners. This information may, for example, be information on the menu offered at the restaurant, in which case the information data 3 would include information on items on the menu. This information will be received via the browser program 12 and displayed on display 14. Via the keypad 13, the mobile computing device 10, 11 may provide further information data 17 back to the server computing device 1, 2. This further information data 17 may include selections from the menu, for example. In a restaurant situation, therefore, the mobile telephone owner with the browser program 12 installed would be able to receive menu information and transmit selections from the menu to the server computing device. There could also, of course, be an acknowledgment that the order has been received by the server computing device, and, indeed, any other information could be exchanged. Mobile device information data 16 may identify the owner of the mobile telephone, in which case information transmitted from a server computing device 1 could be personalised.

As a further example, locality 2 may be a golf course and the information transmitted by the server computer device may be information relating to the position of the mobile computing device 10, 11 on the golf course and also

-9-

the course layout. There may further be information exchanged between the mobile computing device 10, 11 and the server computing device 2, entering of scores on a score card program, for example, via keypad 13.

5 The browser program 12 is generic and the server program 5 is also generic so that any information data compatible with the system can be transmitted. In other words, using a ubiquitous device like a small computer such as a mobile telephone loaded with the software, information 10 pertinent to any locality served by a server computing device in accordance with the present invention can be received.

The information is locality specific, so that only one set of information data is being received at a time, 15 depending upon the locality of the mobile computing device 10, 11.

Further, programs 20 in the form of JAVA™ applets, for example, may be downloaded to the mobile computing device 10, 11, in order to facilitate functionality.

20 In a refinement, the mobile computing device may be arranged to provide positional information using, for example, the GPS (global positioning satellite) system. This enables the server computer to locate the position of the mobile computing device and alter the information 25 accordingly or provide directions to a service provider or product provider, accordingly. For example, in the restaurant situation described above, where GPS information is provided a server device may be able to advise a waiter of the specific table that the owner of the mobile 30 computing device is sitting at, rather than requiring information on the users position to be input to the mobile computing device, for example. Similarly with the golf course example given above, if the server computing device knows the position of the mobile computing device it can 35 provide accurate information to the mobile computing device

for the user to determine exactly where he is on the golf course.

Figure 2 illustrates an alternative embodiment.

Similar reference numerals are used for similar components as in the other figures. Server computing device 300 is part of an advertising system. A very large display 28 is connected to the server computing device 300. The very large display may be an advertising hoarding controlled from the computer 25. The information passed from the server computer 3 to the mobile computing device 10 may include advertising information relating to advertising information appearing on the very large display 28.

Further, an advertising message on display 28 may be controlled in accordance with information data received from the mobile telephone 10, such as mobile device information data (to personalise the message on advertising hoarding 28 for example) or further information data (so that the advertising hoarding 4 could respond to information being provided by the mobile telephone 10 operator via the keypad 13). Such an advertising system could be employed in a "drive by" situation where a mobile telephone owner is driving by an advertising hoarding in their car.

Figure 3 illustrates a further alternative embodiment, showing another application of the present invention. In this embodiment a server computing device 400 shown diagrammatically and not in any detail is arranged to service a relatively large area 30, such as a shopping mall, for example. The shopping mall is divided into a plurality of localities 31 through 41. Each of these localities is served by the server computing device 400, but in each case, the server 400 may be arranged to broadcast different information to each locality. For example, locality 32 may be a clothing store. The server 400 may be arranged, when it detects the presence of a

-11-

mobile computing device 10 in store 32 to broadcast to that mobile computing device information about the clothing, i.e., price information, type, etc.

5 Area 36 may be a food store. When the server 400 detects the presence of a computing device in area 36 it may be arranged to broadcast information on the type and price of food available.

10 In this case, a plurality of localities are provided for by a single server computing device. This may be extended to any application and it is not limited to a shopping mall area.

15 Note that in the example, information data may be sent to the server computer from the mobile computing devices 10. Information may include, for example, a selection of products. The selection of products could then be delivered to the purchaser in return for payment.

20 It is a simple matter for the server computing device to broadcast separate information to different localities as the mobile computing devices can be broadcast to selectively, in a similar way to mobile phones.

25 Another example of the type of arrangement illustrated and described in relation to figure 3 is an application to a transport terminus, such as, for example, a railway station or an airport. The information broadcast in the transport terminus may be timetable information. The total area could be divided into a number of localities equivalent to, for example, platforms of a railway station or boarding gates of an airport. The appropriate timetable information of a particular platform or boarding gate would 30 be broadcast to that locality to a mobile computer user in that locality, so that they can view the timetable information.

35 In all the above embodiments, the server may be "intelligent" in the sense of being able to recognise a particular individual who has previously visited the

locality. An identification number of the mobile computing device may have been recorded by the intelligent server, for example. When that identification number is detected again, the server "knows" who the individual is with the mobile computing device. The server can use this to alter the information it broadcasts for a particular individual. For example, in the train, bus or airline terminus embodiment discussed above, the server could, over time, "learn" which particular bus, train or plane the individual uses and broadcast the appropriate information for that individual.

As will be appreciated, there are many different applications for the present invention. Yet another example is an application for entertainment venues as the locality, where the server will transmit program information to the mobile computing device e.g., for concert goers and theatre goers.

A further example is the delivery of information on presentation, i.e. presentation notes of a lecture, being provided to small computing devices of the users in the lecture locality. A further example is the provision of local area maps by a server broadcast to small computing devices of people within that locality. In the former case, the service that is facilitated is the presentation, and in the latter case the service that is facilitated is the provision of geographical information to the person in the locality.

It will be appreciated by persons skilled in the art that numerous variations and/or modifications may be made to the invention as shown in the specific embodiments without departing from the spirit or scope of the invention as broadly described. The present embodiments are, therefore, to be considered in all respects as illustrative and not restrictive.

-13-

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A mobile computing device for receiving information data provided by server computing devices each of which may be arranged to provide different information data, the mobile computing device comprising browser means arranged, when the mobile computing device is within a predetermined locality where information data from a server computing device can be received, to receive information data from the server computer, and further comprising presentation means for presenting information produced from the information data.
2. A mobile computing device in accordance with claim 1, wherein the browser means or server computing device is arranged to detect when the mobile computing device is within the predetermined locality, to enable the mobile computing device to receive the information data when detection has been made.
3. A mobile computing device in accordance with claim 1 or claim 2, wherein the computing device is arranged to receive the information data via wireless signal.
4. A mobile computing device in accordance with any one of claim 1, claim 2 or claim 3, wherein the information is information associated with the predetermined locality.
5. A mobile computing device in accordance with claim 4, wherein the information content is arranged to facilitate a service and/or product provided at the locality or associated with the locality.
6. A mobile computing device in accordance with claim 4 or 5, wherein the device includes means for providing mobile device information data to the server computer, which mobile device information data may be used by the server computer to determine information data provided to the mobile computing device.
7. A mobile computing device in accordance with

anyone of claims 4, 5 or 6, being arranged to provide further information data to the server computer, whereby the further information data may be processed by the server computer and used to facilitate an operation associated 5 with the predetermined locality.

8. A mobile computing device in accordance with any one of the preceding claims, wherein the mobile computing device is a small computing device.

9. A mobile computing device in accordance with 10 claim 8, wherein the mobile computing device is a palmtop-type computer.

10. A mobile computing device in accordance with claim 8, wherein the mobile computing device is a mobile telephone.

15 11. A mobile computing device in accordance with any one of the preceding claims, being arranged to receive the information data directly from the server computer, without there being any intervening network.

12. A mobile computing device in accordance with any 20 one of claims 6 to 11, being arranged to establish two way communication between the mobile computing device and the server computing device, to enable information exchange.

13. A server computing device arranged to provide information data to a mobile computing device in accordance 25 with any one of the preceding claims, when the mobile computing device is present in a predetermined locality where information from the server computing device can be received.

14. A server computing device in accordance with 30 claim 13, the server computing device comprising identification means arranged to detect when the mobile computing device has entered the predetermined locality, and when detection of entry of the mobile computing device to the predetermined locality has been made, being arranged 35 to provide the information data to the mobile computing

device. 15. A server computing device in accordance with claim 13 or claim 14, being arranged to provide the information data via wireless signal.

5 16. A server computing device in accordance with any one of claims 13, 14 or 15, being arranged to provide information data which is associated with the predetermined locality.

10 17. A server computing device in accordance with claim 16, the information content being for facilitating a service and/or product provided at the locality or associated with the locality.

15 18. A server computing device in accordance with claims 16 or 17, being arranged to receive mobile device information data provided by the mobile computing device, and being arranged to determine information data provided to the mobile device according to the mobile device information data.

20 19. A server computing device in accordance with anyone of claims 16, 17 or 18, being arranged to receive further information data from the mobile computing device, to process the further information data whereby the further information data may be used to facilitate an operation associated with the predetermined locality.

25 20. A server computing device in accordance with any one of claims 13 to 19, further comprising a presentation means for presenting information, and being arranged to present information on the presentation means when the mobile computing device is within the predetermined locality.

30 21. A server computing device in accordance with any one of claims 13 to 20, being arranged to communicate directly with the mobile computing device, without any intervening network.

35 22. A server computing device in accordance with any

- 16 -

one of claims 18 to 21, being arranged to establish two-way information sessions for exchange of information between the mobile device and the server computing device.

23. A system for the provision of information within predetermined localities, the system comprising a plurality of mobile computing devices in accordance with any one of claims 1 to 12 and a plurality of server computing devices in accordance with any one of claims 13 to 22, wherein each of the plurality of server computing devices is arranged to provide information which is associated with a locality where information from the server computing device can be received by a mobile computing device.

24. A system in accordance with claim 23, wherein the information content is arranged to facilitate a service and/or product provided at the locality.

25. A method of providing information to a mobile computing device, comprising the steps of providing information to the computing device when the mobile computing device is within a predetermined locality.

26. A method in accordance with claim 25, comprising the steps of detecting when the mobile computing device is within the predetermined locality and providing information when the detection has been made.

27. A method in accordance with claims 25 or 26, wherein the information is information associated with the predetermined locality.

28. A method in accordance with claim 27, wherein the information content is arranged to facilitate a service and/or product provided at the locality or associated with the locality.

29. A method in accordance with any one of claims 25 to 28, wherein the predetermined locality is a restaurant and the information relates to a menu available in the restaurant.

30. A method in accordance with any one of claims 25

to 28, wherein the predetermined locality is a sporting course, and the information relates to the sporting course.

31. A method in accordance with any one of claims 25 to 28, wherein the predetermined locality is a golf course, and the information relates to topography of the golf course.

32. A method in accordance with any one of claims 25 to 28, wherein the information is advertising information.

33. A method in accordance with any one of claims 25 to 28, wherein the predetermined locality is a transport terminus and the information is information on transport.

34. A method in accordance with any one of claims 25 to 28, wherein the predetermined locality is an entertainment venue and the information is information on the entertainment available.

35. A method in accordance with any one of claims 25 to 28, wherein the predetermined locality is a lecture venue and the information is information associated with a lecture.

36. A method in accordance with any one of claims 25 to 28, wherein the predetermined locality is a geographical area and the information is map information on the geographical area.

37. A method in accordance with any one of claims 25 to 35, comprising the further step of the mobile computing device providing mobile device information data to the server computer arranged to provide the information to the mobile computing device in the predetermined locality, and using the mobile device information data to determine information provided to the mobile computing device.

38. A method in accordance with any one of claims 25 to 37, wherein communications between the server computer and the mobile computing device are direct, without any intervening network.

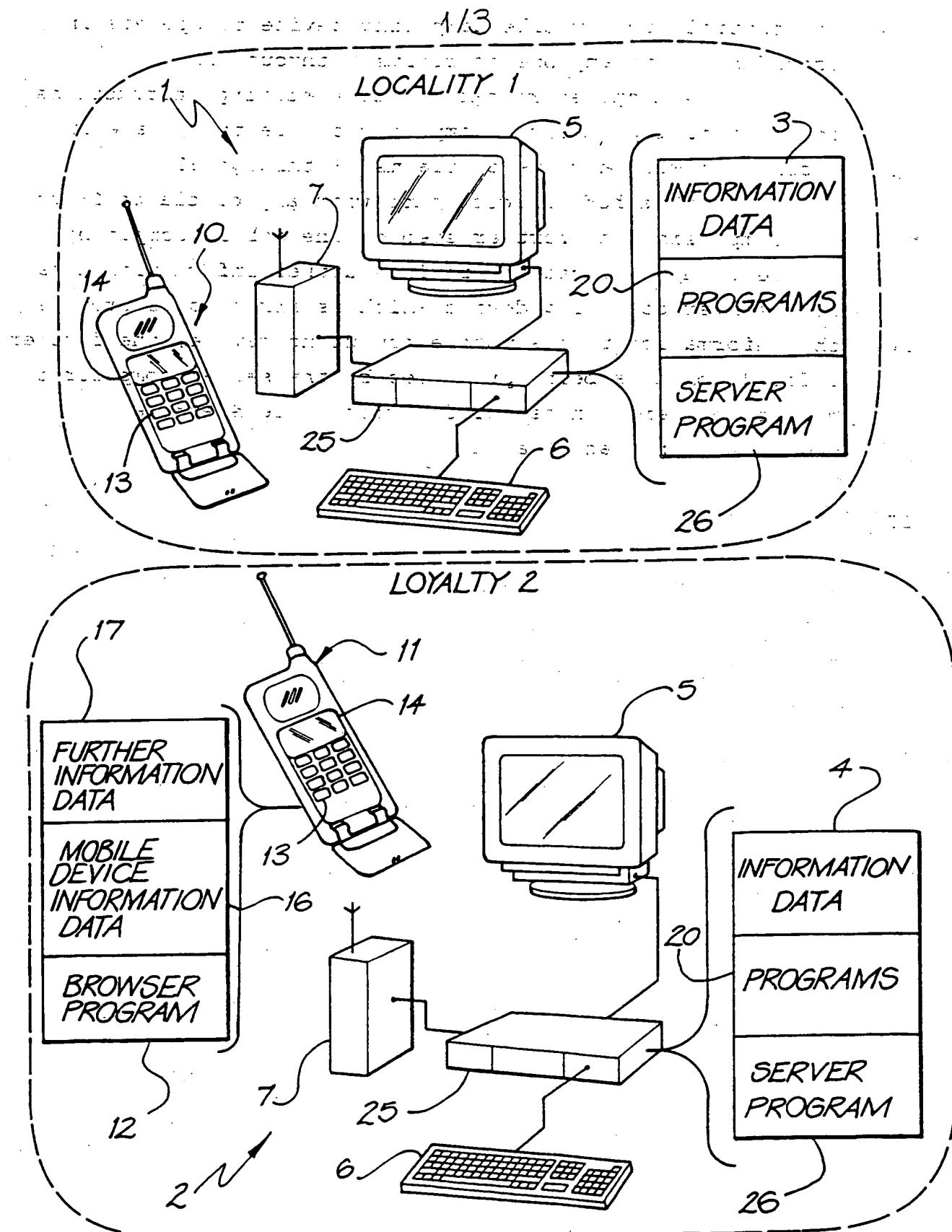
39. A computer readable medium storing instructions.

for controlling a mobile computing device to operate in accordance with any one of claims 1 through 12.

40. A computer readable medium storing instructions for controlling a server computing device to operate in accordance with any one of claims 13 through 22.

41. A method in accordance with any of claims 25 to 38, comprising the further step of the mobile computing device being arranged to provide further information data to a server computing device which is arranged to provide the information to the mobile computing device, the further information data being processed by the server computer to enable an operation associated with a predetermined locality to be facilitated.

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213

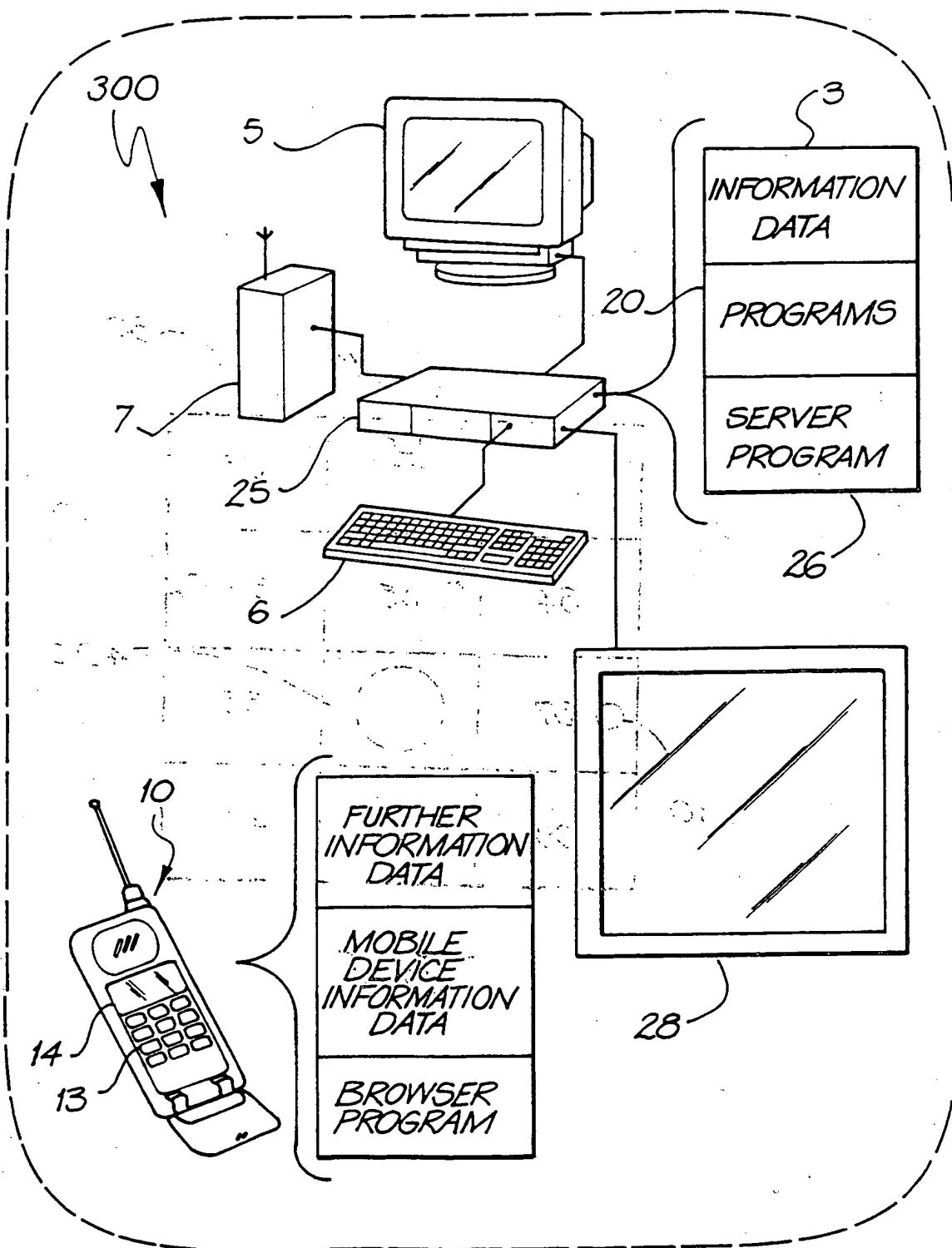


FIG. 2

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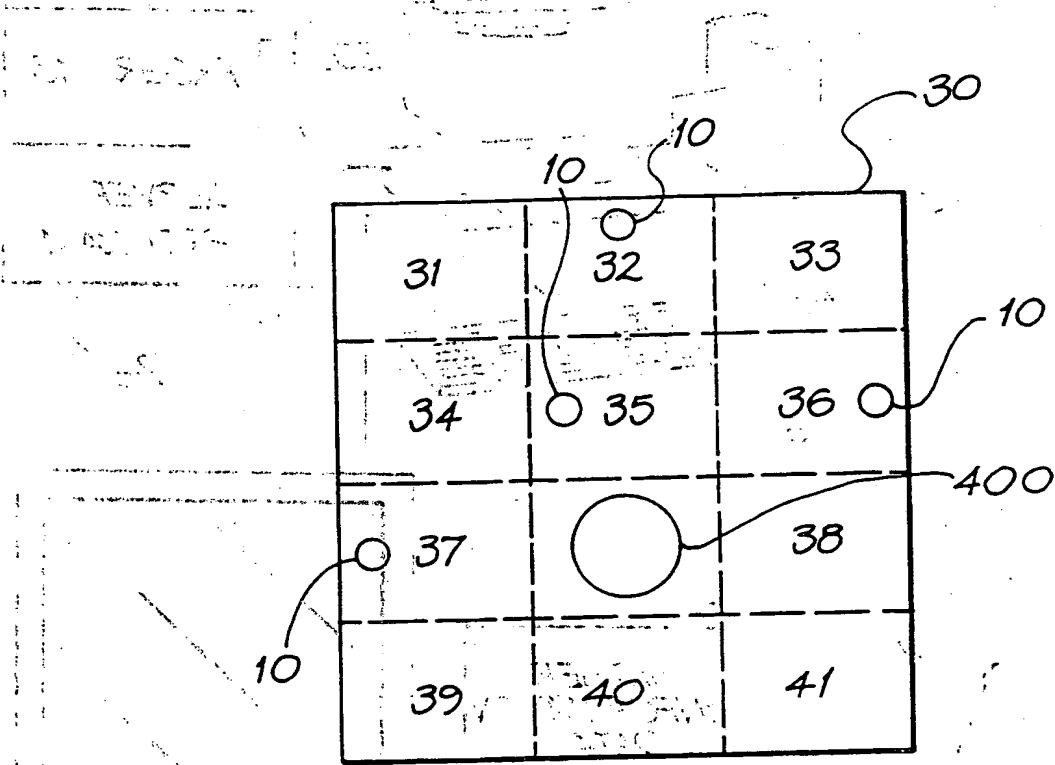


FIG. 3

INTERNATIONAL SEARCH REPORT

International application No.

PCT/AU00/00831

A. CLASSIFICATION OF SUBJECT MATTER

Int. Cl. H04L 12/28, G06F 17/40

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC: ALL CLASSES

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WPAT, INSPEC

USPTO and IBM websites

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P, X	WO 99/45726 (Ortony) 10 September 1999.	1-41
X	EP 917318 (Lucent Technologies) 19 May 1999.	1-41
X	US 5857201 (Wright, Jr. et.al.) 5 January 1999.	1-41
X	US 5821513 (O'Hagan et al.) 13 October 1998.	1-41
X	US 5467341 (Matsukane et al.) 14 November 1995.	1-41

Further documents are listed in the continuation of Box C See patent family annex

* Special categories of cited documents:

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Date of the actual completion of the international search

5 October 2000

Date of mailing of the international search report

11 OCT 2000

Name and mailing address of the ISA/AU

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INTERNATIONAL SEARCH REPORT

Information on patent family members

 International application No.
PCT/AU00/00831

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report			Patent Family Member					
WO	9945726	US	6038595					
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		EP	912017	EP	912026	EP	912027	
		EP	917320	EP	917328	EP	918417	
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US	5857201	NONE						
US	5821513	AU	39580/97	EP	1023689	US	5821512	
		WO	9750055	US	5773954	US	6119935	
		AU	70034/98	EP	1012761	WO	9820440	
US	5467341	NONE						

PCT/GB97/00011 (1997-03-13)

END OF ANNEX

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